

Abstract Submitted
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Multi-mode RWM analysis of NSTX high beta plasmas¹ JAMES BIALEK, S.A. SABBAGH, Columbia University, L. DELGADO-APARICIO, S.P. GERHARDT, PPPL — The behavior of resistive wall modes (RWM) in the NSTX device has been examined with the multi-mode VALEN computer code. Experiments at very high-normalized beta reaching 7.4 in conditions with the ideal MHD no-wall limit near 4 were produced in NSTX and are analyzed to compare the multi-mode model with experiment. Multi-mode VALEN includes conducting structures, coils, and plasma response as an L-R circuit [1]. We summarize the multi-mode formulation and contrast it with single-mode VALEN [2]. We present multi-mode characteristics of RWM behavior for NSTX high beta plasmas including the mode-spectrum evolution for passive growth and the interaction of the mode spectrum with exterior fields. The response to applied fields is studied in the time domain as well as via frequency response.

[1] A.H. Boozer, Phys. Plasmas 10 (2003) 1458

[2] J.M. Bialek et al. Phys. Plasmas 8 (2001) 2170

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